Notes from Follow-Up Correspondence with FirstEnergy Regarding Data Submittal

This summary documents EPA's follow-up correspondence with FirstEnergy regarding the data that FirstEnergy submitted to EPA on February 20, 2014 (DCN SE04679) in response to EPA's January 17, 2014 data request to FirstEnergy (DCN SE04660).

On March 5, 2014, EPA provided FirstEnergy with a list of five questions related to the Hatfield's Ferry data that had been submitted. FirstEnergy provided responses to those questions on March 10, 2014. The following is a list of FirstEnergy's correspondence with EPA (with associated DCNs):

- Email to Phillip Flanders (DCN SE04316A2); and
- FirstEnergy responses to EPA questions (DCN SE04316A3).

On March 25, 2014, EPA provided FirstEnergy with a list of three additional questions related to the Hatfield's Ferry data (DCN SE04316A4). FirstEnergy provided responses to these questions on March 26, 2014. The email from FirstEnergy to EPA with responses to the questions is included in the record as DCN SE04316A5.

EPA and ERG participated in a call with FirstEnergy on April 10, 2014 to discuss additional EPA questions on the Hatfield's Ferry data and information FirstEnergy provided in follow-up responses.

The following people participated in the call:

EPA Personnel	FirstEnergy Personnel	ERG Personnel
Ron Jordan	Joe Lapcevic	TJ Finseth
Phillip Flanders	Bill Cannon	
Cuc Schroeder		

The following questions were discussed during the call, with FirstEnergy's responses described after each question. The questions were not provided to FirstEnergy prior to the call.

1. Why is there an approximately 1 year gap in the data between 11/29/2011 and 11/6/2012? Did FirstEnergy's Beta Lab begin analyzing samples on 11/6/2011, 12/1/2011, or 11/6/2012?

FirstEnergy Response: FirstEnergy stated that there should be data for that time period. FirstEnergy stated that November 29, 2011 is the last of samples that were analyzed by the Allegheny Lab, and that there should be data from FirstEnergy's Beta Lab starting shortly after that time period. FirstEnergy stated that the data must have been transferred to the spreadsheet incorrectly.

Action Item: FirstEnergy stated that they would pull the data and provide it to EPA.

2. Is the change in MDL for arsenic meant to be after 11/6/2012 when the reporting begins again?

FirstEnergy Response: FirstEnergy stated that the change in MDL is related to the change in the laboratories. Therefore, the change in MDL occurs after the last Allegheny laboratory arsenic result from November 29, 2011. FirstEnergy stated that arsenic MDL may change a couple times because the FirstEnergy Beta lab started analyzing samples using 200.8. However, FirstEnergy was uncertain whether there are any 200.8 results from the FirstEnergy Beta lab that are provided in the output.

Action Item: FirstEnergy will determine when the FirstEnergy Beta lab started using 200.8 and will let EPA know if any of the arsenic results are from 200.8 analysis and, if so, what the associated MDL and RL for those samples.

3. Is the MDL that is mentioned for arsenic for the Allegheny Chemical Lab the same as the lab's reporting limit? If so, we would treat data points reported as "0" as "ND 2ppb" non-detect with a quantitation limit of 2 ppb (for example).

FirstEnergy Response: FirstEnergy stated that they reported everything to the MDL, so they don't think the Allegheny lab ever generated a quantitation limit for its 200.7 arsenic analyses. FirstEnergy stated that because they don't have a quantitation limit, they can't speak to whether the values close to the MDL are truly present at the values reported or whether they are estimated values.

4. Please confirm the following table of what we believe the MDL, RL, and laboratory are for each column of data. There are two RLs that we are missing.

Column Letter (Analyte)	**MDL**	**RL**	**Lab Name**
D (Arsenic - Before 11/30/2011)	0.002 mg/L		Allegheny's Chemical Lab
D (Arsenic - After 12/1/2011)	0.006 mg/L	0.03 mg/L	FirstEnergy's Beta Lab
E (Trace mercury)	0.010 ug/L	0.03 ug/L	Geochemical Labs
F (Mercury – EPA Method 245.7)	0.010 ug/L	0.03 ug/L	Geochemical Labs
H (Mercury – EPA Method 245.1)	0.00006 mg/L	0.0002 mg/L	FirstEnergy's Beta Lab
I (Arsenic – EPA Method 200.8)	0.000035 mg/L		

FirstEnergy Response: As described in response to Question 3, FirstEnergy does not believe that the Allegheny lab generated a quantitation limit for the 200.7 arsenic analyses. For Column I, which is 200.8 TestAmerica arsenic analyses, FirstEnergy stated that they would have to check with TestAmerica.

Action Item: FirstEnergy will check the TestAmerica laboratory reports to determine whether the 35 ppt MDL is correct and also find the associated quantitation limit.

5. Did the laboratory used for mercury analyses change (as was done for arsenic) or did Geochemical Lab do all mercury analyses?

FirstEnergy Response: FirstEnergy stated that Geochemical Labs was always used for the mercury analyses.

6. Please confirm the startup/commissioning date for the treatment system at Hatfield's Ferry -- According to our site visit notes, "In June 2009, Hatfield's Ferry began sending wastewater to the FGD wastewater treatment system. The wastewater treatment system first discharged on June 30, 2009." Please note however, that the FGD did not start up all at once. According to the Hatfield's Ferry SER, "The Unit 1 FGD system was installed in June 2009, and the Unit 2 and Unit 3 FGD systems were both installed in October 2009."

FirstEnergy Response: FirstEnergy stated that information is correct, but they do not know what the estimated commissioning time was for the treatment system, in terms of when the operators seemed to have the system under control and operating properly. FirstEnergy stated that they did have issues for some time related to plugging in the sand filters and building the floc in the clarifiers when both clarifiers were operating. FirstEnergy noted that while they were having some of these issues, it didn't seem to show up in the effluent results. FirstEnergy also noted that the plant ultimately altered the operation of the treatment system to only operate one of the two clarifiers at a time, which helped build the floc and resulted in better settling.

Action Item: FirstEnergy will talk with one of the engineers that worked with the system to get an estimate of when the system started operating properly. Additionally, FirstEnergy will check when the performance testing was conducted by Siemens, which should identify when Siemens was comfortable that the system was operating properly.

7. We notice that all data is more variable after 11/6/12. This is particularly striking for arsenic, but also apparent for mercury. What do you believe to be the cause for this? For example, there is a significant change in the concentrations and numbers of nondetects for arsenic reported after 11/6/2012. The data provided from before 11/29/2011 seems to contain no nondetects and is consistently below 0.022 ppm. We also noticed this happens to correspond to the change in laboratories. Was there some other change in plant operations going on between 11/6/2012 and decommissioning that might explain the pattern in the data?

FirstEnergy Response: FirstEnergy stated that they do not have any explanation for the increase in arsenic concentrations corresponding to the change in laboratories. They do not know if there were specific changes in the plant operations that would have cause the increase or if it simply because a different laboratory is analyzing the samples.

8. For mercury, there are several other observations that are unusual. What would be the reason for the following occurrences:
    - Before 11/6/12
        - 3 observations substantially above 1,000 ppt (1/5/10, 1/12/10, 1/19/10). These observations are order of magnitude higher than the preceding and following weeks.
        - 1 observation at 752 ppt (3/29/11). The preceding week is at 488 ppt, but all other preceding and following weeks are hundreds of ppt lower.
        - Observations at 519 & 488 ppt
    - After 11/6/12
        - 4 results above 1,000 ppt
        - 1 result at 909 ppt

FirstEnergy Response: FirstEnergy stated that they do not know what is causing the large spikes in the mercury concentrations. Because the results are not three orders of magnitude off, it doesn't seem to be a units issue; however, FirstEnergy stated that it could be a data entry error (i.e., someone converted the units and tied in the wrong number.

Action Item: FirstEnergy will look at the laboratory reports to confirm that the data were entered correctly. FirstEnergy will also pull the data they have for additional analytes to determine if they tend to see increases in other pollutants at the times when there are increases in the mercury concentrations. FirstEnergy stated that they would provide these additional data to EPA.

On May 2, 2014, FirstEnergy sent an email to Phillip Flanders with responses to the follow-up action items from the call on April 10, 2014. The following is a list of FirstEnergy's correspondence with EPA (with associated DCNs):

- Email to Phillip Flanders, including responses to action items (DCN SE04316A6);
- Hatfield's Ferry Outfall 306 arsenic and mercury data from June 2009 through December 2013 (DCN SE04316A7);
- Hatfield's Ferry Outfall 306 data for multiple pollutants from July 2009 through November 2011 (DCN SE04316A8); and
- Hatfield's Ferry Outfall 306 DMR for June 2009 (DCN SE04316A9).

On May 13, 2014, FirstEnergy sent another email to Phillip Flanders with an additional spreadsheet of analytical data from Hatfield's Ferry Outfall 306. The following is a description of the information provided, as well as the associated DCNs for the information:

- Email to Phillip Flanders (DCN SE04316A10); and
- Hatfield's Ferry Outfall 306 data for multiple pollutants from December 2011 through April 2014 (DCN SE04316A11).

On May 29, 2014, Ron Jordan sent an email to FirstEnergy (DCN SE04316A12) to try and set up a call to discuss three additional questions regarding the additional data that FirstEnergy provided in the May 2

and May 13 deliveries. FirstEnergy responded to the email on June 2, 2014 with responses to a few of the questions prior to the follow-up call (DCN SE04316A13). EPA, ERG, and Westat participated in a call with FirstEnergy on June 2, 2014 to discuss EPA's remaining questions from the May 29, 2014 follow-up.

The following people participated in the call:

EPA Personnel	FirstEnergy Personnel	ERG Personnel	Westat Personnel
Ron Jordan	Joe Lapcevic	TJ Finseth	Yan Zhuang
Phillip Flanders		Dan-Tam Nguyen	
Cuc Schroeder			

The following questions were discussed during the call, with FirstEnergy's responses described after each question.

1. Comparing the data you provided on 5/2/2014 and 5/13/2014, we observed apparent data entry errors. Please specify which values for mercury Chem Precip Effluent are correct.

Date	5/2/2014 dataset (Hg, ng/L)	5/13/2014 dataset (Hg, ng/L)
12/20/2011	122	12.2
1/3/2012	424	42.4
2/2/2012	144	14.4
2/21/2012	170	17

FirstEnergy Response: FirstEnergy reviewed the original raw data download and determined that the values from the 5/13/2014 spreadsheet are correct (i.e., 12.2, 42.4, 14.4, and 17 ng/L). FirstEnergy noted that the original download file had data in both ng/L and ug/L and they assume there was an error with the conversion for the first data set.

EPA then asked whether FirstEnergy had checked all the data or whether they had checked just the four data points identified in the table above. How confident is FirstEnergy that there aren't other errors in the datasets?

Action Item: FirstEnergy stated that they would check the mercury data for all the associated dates to confirm there are no other transcription errors.

2. What is the cause for elevated mercury concentrations for Chem Precip Effluent on the following dates?
    a. 2/28/2012 (1,520 ng/L)
    b. 3/13/2012 (1,160 ng/L)
    c. 3/20/2012 (1,710 ng/L)
    d. 3/27/2012 (1,320 ng/L)

e. 4/3/2012 (3,400 ng/L)
f. 6/5/2012 (830 ng/L)

FirstEnergy Response: FirstEnergy stated that they checked the data and did not find any transcription errors; therefore, they believe the values are correct. FirstEnergy noted that they occasionally had issues with the sand filters, but they didn't see any correlation between the elevated mercury results and increased TSS in these samples. FirstEnergy also noted that the wastewater treatment operators were changing frequently during those time periods because of training, and that could have led to multiple operators making various changes that may have impacted the performance of the system. However, FirstEnergy noted that the arsenic concentrations were not elevated during this time period. Therefore, FirstEnergy stated that they don't have a good explanation for the increased mercury concentrations that occurred during this time period.

3. We noticed dates for Method 245.1 (mercury) data and Method 200.8 (arsenic) data changed between your original spreadsheet provided 2/20/2014 and the updated spreadsheets provided 5/2/2014 and 5/13/2014. Specifically, the 2/20/2014 spreadsheet shows the 245.1 and 200.8 data on 12/18/12, 1/4/13, and 1/8/13; the 5/2/2014 spreadsheet shows these data on 11/29/12, 12/19/12, and 12/21/12. Which dates are correct?

FirstEnergy Response: FirstEnergy noted that the correct dates are 11/29/2012; 12/19/2012; and 12/21/2012.

4. What are the target parameters (analytes & concentrations) for the FGD wastewater treatment effluent?

FirstEnergy Response: FirstEnergy stated that the plant did not have any specific targets for metals. FirstEnergy noted that the limits in the plant's NPDES permit were set based on the design report that was prepared by Siemens. The estimated effluent concentrations included in the design report were based on a certain coal quality. FirstEnergy stated that the FGD wastewater treatment system was operated based on maintaining the pH, floc in the clarifier, and TSS out of the sand filter.

5. How would the plant operators have responded to the high effluent mercury results noted in Question 2?

FirstEnergy Response: FirstEnergy stated that because the analytical results are not available in real time, it is unlikely that the operators made any changes to the system after getting those mercury results.

6. What is represented by the "0" (zero) results in the data spreadsheets. For example, the mercury result for 11/24/2009 is reported as 0.

FirstEnergy Response: FirstEnergy noted that the 0 (zero) results were entered into the spreadsheet when the result was less than the MDL. Per West Virginia regulations, FirstEnergy was required to report values down to the MDL. The MDL for the Geochemical Labs mercury results using 245.7 was 10 ng/L and the RL was 30 ng/L. FirstEnergy noted that some of the results in the spreadsheet are likely J-values (i.e., results between the MDL and the RL). For example, the mercury result on 11/17/2009 of 24.1 ng/L should be considered a J-value.

7. EPA noted a couple discrepancies between some mercury results provided by FirstEnergy and results provided in UWAG's comments. The following table identifies the discrepancies.

Date	FirstEnergy Mercury Result (ng/L)	UWAG Mercury Results (ng/L)
5/25/2010	4.38	<10
6/1/2010	7.95	<10

FirstEnergy Response: FirstEnergy noted that the results included in the FirstEnergy spreadsheet are less than the laboratory MDL. When inputting the results into its LIMS system, FirstEnergy would simply enter whatever value was provided by the laboratory and be confident that the system would convert any values below the MDL into "<10" when reporting to the state. When FirstEnergy pulled the data, they pulled the values that were entered into the system, not what was reported to the state. UWAG probably noticed that these results were below the MDL and reported it as such.

8. What is the procedure (i.e. total recoverable metals or dissolved metals) for all of the analytes provided in the "Hatfield 306Data 11-29-2011_to_04-28-2014jpl.xlsx" and "HatfieldIMP306Data7-1-2009to11-30-2011RawEdited.xlsx" spreadsheets?

FirstEnergy Response: FirstEnergy stated that all analytical results are total recoverable metals except where explicitly noted that it is dissolved. FirstEnergy noted that "FeD" and "NiD" represent dissolved iron and dissolved nickel, respectively. FirstEnergy doesn't think there is any other dissolved metals data in the spreadsheet.

9. What are the MDLs and RLs for all analytes (except arsenic and mercury) provided in the "Hatfield 306Data 11-29-2011_to_04-28-2014jpl.xlsx" and "HatfieldIMP306Data7-1-2009to11-30-2011RawEdited.xlsx" spreadsheets?

FirstEnergy Response: FirstEnergy stated that they will provide EPA with the MDL and RLs for each analyte included in those spreadsheets.

Action Item: FirstEnergy stated that they would check the mercury data for all the associated dates to confirm there are no other transcription errors.

On June 11, 2014, EPA sent a follow-up email to FirstEnergy requesting responses to the action items from the June 2, 2014 call (DCN SE04316A14). FirstEnergy sent a response to one of the action items later that day on June 11, 2014 related to the MDLs and RLs for the other analytes. The following is a list of FirstEnergy's correspondence with EPA (with associated DCNs):

- Email to Ron Jordan (DCN SE04316A15); and
- MDLs and RLs for Hatfield's Ferry Outfall 306 data for multiple pollutants from December 2011 through April 2014 (DCN SE04316A16).

On June 16, 2014, FirstEnergy sent a response to the final action item from the June 2, 2014 call related to the comparison of analytical mercury results and potential transcription errors. The following is a description of the information provided, as well as the associated DCNs for the information:

- Email to Ron Jordan (DCN SE04316A17); and
- Mercury data comparison (DCN SE04316A18).